

# NMDCAT

## SUPER FINAL PAPER-2

Total MCQs: 200

Max. Marks: 200

### BIOLOGY

- Q.1** It is not true about prokaryotic cell:  
a. Membranous organelles absent  
b. Krebs cycle in mitochondrial matrix  
c. Division by binary fission  
d. Peptidoglycan cell wall
- Q.2** Which of the following has ability to store  $\text{Ca}^{+2}$  in skeletal muscle cell?  
a. Rough ER  
b. Smooth ER  
c. Golgi apparatus  
d. Peroxisome
- Q.3** Golgi vesicles arise from:  
a. Rough endoplasmic reticulum  
b. Smooth endoplasmic reticulum  
c. Cis face of Golgi apparatus  
d. Trans face of Golgi apparatus
- Q.4** Mitochondria extract energy from organic food and supply it to cell in form of:  
a. Glucose  
b. Creatine phosphate  
c. ATP  
d. NADH
- Q.5** In an animal cell, it generally occupies the central space:  
a. Mitochondria  
b. Nucleus  
c. Vacuole  
d. Endoplasmic reticulum
- Q.6** All of following are common molecules in membrane of all type of cells except:  
a. Globular protein  
b. Cholesterol  
c. Traces of carbohydrates  
d. Phospholipid
- Q.7** Most familiar disaccharide is:  
a. Malt sugar  
b. Milk sugar  
c. Fruit sugar  
d. Cane sugar
- Q.8** Polysaccharides are insoluble in water due to:  
a. Unavailability of OH groups  
b. Unavailability of 1, 2 glycosidic linkage  
c. Large molecular weight  
d. High proportion of  $\alpha$ -glucose
- Q.9** During formation of glycylalanine, which group of alanine reacts to form peptide bond?  
a. R group  
b.  $\text{CH}_3$  group  
c.  $\text{NH}_2$  group  
d.  $\text{COOH}$  group
- Q.10** A protein will develop globular shape if it attains:  
a. Primary structure  
b. Secondary structure  
c. Tertiary structure  
d. Quaternary structure
- Q.11** Lipids are insoluble in:  
a. Benzene  
b. Chloroform  
c. Water  
d. Ether
- Q.12** In a typical nucleotide, phosphoric acid is attached at carbon number:  
a. 1'  
b. 2'  
c. 3'  
d. 5'
- Q.13** If a metal ion is used as detachable co-factor, it will be called as:  
a. Inhibitor  
b. Activator  
c. Coenzyme  
d. Prosthetic group
- Q.14** Specificity of an active site is determined by:  
a. Its charge  
b. Its shape  
c. Its R groups  
d. All A, B, C
- Q.15** Rise in temperature beyond optimum value may lead to:  
a. Activation of enzyme  
b. Inactivation of enzyme  
c. Denaturation of enzyme  
d. Ionization of enzyme
- Q.16** During photosynthesis, oxygen and water are released as products respectively in:  
a. Light reactions and Dark reactions  
b. Dark reactions and Light reactions  
c. Both in light reactions  
d. Both in dark reactions



- Q.17 Which of the following is absorbed more by chlorophylls as compared to others?  
a. Green  
b. Yellow  
c. Indigo  
d. Orange
- Q.18 All of the following are products of light dependent phase of photosynthesis except:  
a. ATP  
b. NADPH  
c.  $O_2$   
d.  $G_3P$
- Q.19 The primary electron acceptor of photosystem I transfers electrons to:  
a. Plastoquinone  
b. Cytochrome  
c. Ferredoxin  
d. Plastocyanin
- Q.20 Decarboxylation does not occur during:  
a. Alcoholic fermentation  
b. Lactate fermentation  
c. Pyruvic acid oxidation  
d. Citric acid cycle
- Q.21 During Krebs cycle, oxidation of succinate produces:  
a.  $\alpha$ -ketoglutarate  
b. Malate  
c. NADH  
d.  $FADH_2$
- Q.22 These are extremely small infectious agents that contain nucleoprotein:  
a. Prions  
b. Viruses  
c. Viroids  
d. Bacteria
- Q.23 Biosynthetic machinery of host mainly used by viruses is:  
a. Replication enzymes  
b. Ribosomes  
c. Nucleus  
d. Golgi bodies
- Q.24 Among followings, \_\_\_\_\_ enzyme is naturally found in human immunodeficiency virus.  
a. DNA polymerase  
b. RNA polymerase  
c. Reverse transcriptase  
d. Ligase
- Q.25 All of the following are the essential components of virion structure except:  
a. Proteins  
b. Deoxyribonucleic acid  
c. Ribonucleic acid  
d. Lipoproteins
- Q.26 When bacterial division is in three planes, it will produce:  
a. Streptococci  
b. Streptobacilli  
c. Tetrad  
d. Sarcina
- Q.27 It provides protection to bacterial cell from osmotic lysis:  
a. Cell membrane  
b. Cell wall  
c. Capsule  
d. Slime
- Q.28 According to five kingdom system of classification, the ancestors of all eukaryotic and multi-cellular life form on earth belong to the kingdom:  
a. Fungi  
b. Protista  
c. Monera  
d. Plantae
- Q.29 It is a basic unit of taxonomical classification:  
a. Species  
b. Order  
c. Genus  
d. Class
- Q.30 Which of the following trait is present in all tracheophytes?  
a. True leaves, stem and roots  
b. Presence of vascular tissue  
c. Flowers for reproduction  
d. Formation of ovule
- Q.31 Terminal part of carpel, designed to receive pollens is called:  
a. Stigma  
b. Ovary  
c. Style  
d. Anther
- Q.32 This is true about members of phylum cnidaria:  
a. Radiata - Diploblastica  
b. Radiata - Triploblastica  
c. Bilateria - Diploblastica  
d. Bilateria - Triploblastica
- Q.33 If the cell is placed in hypertonic solution, what will happen?  
a. Endosmosis  
b. Exosmosis  
c. Deplasmolysis  
d. No change
- Q.34 All of the following plasma proteins are produced by liver except:  
a. Albumin  
b. Fibrinogen  
c. Antibodies  
d. Prothrombin
- Q.35 Maximum number of cells present in cubic millimeter of blood are:  
a. Erythrocytes  
b. Granulocytes  
c. Agranulocytes  
d. Platelets

- Q.36 Complete separation of deoxygenated blood and oxygenated blood in the heart is maintained by:  
 a. Aperture  
 c. Septum  
 b. Valves  
 d. Myocardium
- Q.37 Middle layer is relatively thin and only slightly muscular with few elastic fibers in:  
 a. Aorta  
 c. Capillaries  
 b. Arteries  
 d. Veins
- Q.38 It represents second line of defense in our body:  
 a. Skin  
 c. Phagocytes  
 b. Mucous membrane  
 d. Lymphocytes
- Q.39 B lymphocytes in humans are differentiated in:  
 a. Bursa of fabricius  
 c. Blood  
 b. Bone marrow  
 d. Thymus
- Q.40 Providing immunity artificially is called:  
 a. Vaccination  
 c. Sterilization  
 b. Immunization  
 d. Chemotherapy
- Q.41 Proximal part of ureter is called \_\_\_\_\_ and found at \_\_\_\_\_:  
 a. Hilus, Kidney  
 c. Urethral orifice, Bladder  
 b. Pelvis, Kidney  
 d. Urethral orifice, Bladder
- Q.42 In a normal person, how much glucose is reabsorbed at PCT?  
 a. 60%  
 c. 80%  
 b. 70%  
 d. 100%
- Q.43 Inner medulla is highly concentrated part of kidney. This hypertonicity can be attributed to presence of:  
 a. Water  
 c. ADH  
 b. Glucose  
 d. Urea
- Q.44 Kidney stone formation can be prevented by increasing uptake of:  
 a. Oxalates  
 c. Water  
 b. Proteins  
 d. Calcium
- Q.45 A body change that does not occur in case of increase in body temperature:  
 a. Heat dissipation  
 c. Evaporative cooling  
 b. Sweat gland inhibition  
 d. Vasodilation at skin
- Q.46 Each A band has a lighter strip in its mid-section called:  
 a. I band  
 c. H-zone  
 b. Z band  
 d. M line
- Q.47 Thick and thin filaments in skeletal muscle are linked together through:  
 a. Cross bridges  
 c. Troponin  
 b.  $Ca^{+2}$  ions  
 d. Tropomyosin
- Q.48 During muscle contraction, ATP molecules bind with:  
 a. Actin  
 c. Troponin  
 b. Myosin  
 d. Tropomyosin
- Q.49 Peripheral branch of sensory neuron is often called as:  
 a. Dendrite  
 c. Soma  
 b. Dendron  
 d. Axon
- Q.50 Nerve impulse can also be called as wave of:  
 a. Polarization  
 c. Depolarization  
 b. Repolarization  
 d. Hyperpolarization
- Q.51 The correct sequence for depolarization and repolarization is:  
 A. Stimulus applied at a site on polarized membrane  
 B. Increased permeability for  $Na^{+}$   
 C. Generation of action potential  
 D. Increased permeability for  $K^{+}$   
 E. Restoration of membrane potential  
 a. A → B → C → D → E  
 c. A → D → C → B → E  
 b. B → A → C → D → E  
 d. A → B → D → C → E





- Q.52 A gland that plays main role in regulation of blood glucose level is:  
a. Thyroid  
b. Parathyroid  
c. Pancreas  
d. Adrenal
- Q.53 All of the following are produced and secreted by neurosecretory cells of hypothalamus except:  
a. ADH  
b. TSH  
c. CRH  
d. PIF
- Q.54 ADH and oxytocin are stored in:  
a. Secretory cells of anterior pituitary  
b. Secretory cells of median pituitary  
c. Axon endings at posterior pituitary  
d. Soma at posterior pituitary
- Q.55 It is the longest phase of menstrual cycle:  
a. Proliferative phase  
b. Ovulatory phase  
c. Secretory phase  
d. Menstrual phase
- Q.56 Premature birth or miscarriage can happen if secretion of \_\_\_\_\_ is disturbed.  
a. Progesterone  
b. FSH  
c. LH  
d. Oxytocin
- Q.57 In females, the reproductive cycle alters the structure and functions of:  
a. Ovaries only  
b. Both ovaries and uterus  
c. Uterus only  
d. Cervix only
- Q.58 Organism of pure line is that which produces individuals of:  
a. Dominant characters  
b. Recessive characters  
c. Its own characters  
d. Intermediate type
- Q.59 When two or more alleles do not show complete dominance or both the alleles are expressing independently in heterozygotic condition. Such a condition is called:  
a. Complete dominance  
b. Over-dominance  
c. Co-dominance  
d. Incomplete dominance
- Q.60 If probability of round seeded plant is  $3/4$  and green seeded plant is  $1/4$  then joint probability of wrinkled green will be:  
a.  $1/16$   
b.  $3/16$   
c.  $9/16$   
d.  $16/16$
- Q.61 Which genotype characterizes an organism that is heterozygous for two genes?  
a. RRYy  
b. RrYY  
c. RRYy  
d. RrYy
- Q.62 Rh factor may be responsible for:  
a. Turner's syndrome  
b. AIDS  
c. sickle-cell anemia  
d. Erythroblastosis fetalis
- Q.63 If a carrier woman for hemophilia is married to a normal man, then all of the following combinations can exist except:  
a.  $X^{H+}X^{H+}$   
b.  $X^{H+}Y$   
c.  $X^{H+}Y$   
d.  $X^{H+}X^{H+}$
- Q.64 The method for analyzing inheritance pattern of traits in human being is:  
a. DNA fingerprinting  
b. Control crosses  
c. Pedigree analysis  
d. Karyotyping
- Q.65 Chromosomes can be classified into maracentric, sub-metacentric, telocentric and acrocentric on the basis of:  
a. Amount of DNA  
b. Position of centromere  
c. Number of histone molecules  
d. Repetitive nucleotide sequences
- Q.66 During DNA replication, which of the following is constructed towards replication fork:  
a. Template strand  
b. Leading strand  
c. Lagging strand  
d. Okazaki fragment
- Q.67 It can act as stop signal for transcription:  
a. TTGACA  
b. TATAAT  
c. GCGCATAT  
d. UAA
- Q.68 Amino acid attaches at which site of RNA?  
a. Anticodon site  
b. Ribosomes recognition site  
c. 3'-site with terminal OH  
d. Activation enzyme recognition site



- Q.69 As a result of replication, parental DNA would become completely dispersed and that each strand of all the daughter molecules would be a mixture of old and new DNA. This is called as:
- Conservative idea
  - Disruptive idea
  - Dispersive idea
  - Semi-conservative idea
- Q.70 In what direction, can a DNA polymerase work when catalyzing the addition of nucleotide monomers to build a strand of DNA?
- From the 5' toward the 3' end of the new strand being assembled
  - From the replication centers in two directions called replication forks
  - From the 3' to the 5' end of the strand being assembled
  - In both directions if DNA ligase is present
- Q.71 Sequence of amino acids in a polypeptide chain of protein molecule corresponds to the sequence of nucleotides on mRNA for that protein. If reading frame of mRNA for a human protein is 993 nucleotides including a stop codon at the end, how many amino acids would be incorporated in the polypeptide chain?
- 331
  - 993
  - 93
  - 330
- Q.72 Lamarck presented a mechanism to explain how:
- Life took origin
  - Genotype modifies phenotype
  - Adaptations evolve
  - Allele frequency causes evolution
- Q.73 Theory of modern synthesis evolved after:
- Biogeography
  - Palaeontology
  - Population genetics
  - Comparative embryology
- Q.74 In a diploid population of 500 plants, 120 plants are homozygous dominant for flower colour and 180 are heterozygous. What will be number of recessive alleles in that population?
- 180
  - 700
  - 380
  - 580
- Q.75 Bacteriophage mediated transfer of gene of interest into a host bacterium is called:
- Transfection
  - Transformation
  - Transduction
  - Conjugation
- Q.76 All of the following can be used during DNA fingerprinting except:
- Restriction enzymes
  - Radio-labelled probe
  - X-ray film
  - DNA ligase
- Q.77 Bacterial cells take up recombinant plasmids when they are treated with:
- $\text{CaCl}_2$
  - $\text{NaCl}$
  - $\text{KCl}$
  - $\text{NaOH}$
- Q.78 All of the following are used directly or indirectly to synthesize chimeric DNA except:
- Reverse transcriptase
  - Restriction endonuclease
  - DNA ligase
  - Taq polymerase
- Q.79 Genital herpes can be treated by using antibodies obtained from genetically modified:
- Wheat
  - Corn
  - Soya bean
  - Rice
- Q.80 Transgenic mice have been used to produce:
- Protein rich milk
  - Growth hormone
  - Protein rich meat
  - Extra hair

## CHEMISTRY

- Q.81 Which one of the following sub-shells has greater energy according to Auf-bau principle?
- 4s
  - 4p
  - 4d
  - 4f
- Q.82 The bond with highest bond energy
- $\text{C} \equiv \text{C}$
  - $\text{C} = \text{C}$
  - $\text{N} = \text{N}$
  - $\text{C} - \text{C}$
- Q.83 Which has different shape than others
- $\text{CS}_2$
  - $\text{BeCl}_2$
  - $\text{SO}_2$
  - $\text{C}_2\text{H}_2$



- Q.84** The enthalpy of neutralization of given reaction is  $-57 \text{ kJ/mol}$   
 $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$   
 By using this information, what could be the theoretical value for heat liberated in the following neutralization reaction?  
 $\text{Ba(OH)}_2 + 2\text{HCl} \rightarrow \text{BaCl}_2 + 2\text{H}_2\text{O}$   
 a.  $-57 \text{ kJ}$  b.  $-76 \text{ kJ}$   
 c.  $-114 \text{ kJ}$  d.  $-228 \text{ kJ}$
- Q.85** The enthalpy of formation of which compound is measured directly  
 a. CO b.  $\text{Al}_2\text{O}_3$   
 c.  $\text{CCl}_4$  d. MgO
- Q.86** Oxidation number of sulphur in  $\text{SO}_4^{2-}$   
 a. +6 b. +3  
 c. +4 d. +2
- Q.87** Which of following on electrolysis will produce metal on cathode in aqueous solution  
 a.  $\text{PbSO}_4$  b.  $\text{FeSO}_4$   
 c.  $\text{ZnSO}_4$  d.  $\text{CuSO}_4$
- Q.88** What is the pH of acetate buffer which contains  $0.1 \text{ M CH}_3\text{COOH}$  and  $1.0 \text{ M CH}_3\text{COONa}$  ( $\text{pK}_a = 4.74$ )  
 a. 3.74 b. 5.74  
 c. 4.74 d. 6.74
- Q.89** The term empirical formula can be used for  
 a. Covalent compound b. Silica  
 c. Ionic compound d. All of the above
- Q.90** The moles of  $\text{CaCO}_3$  that contains  $10 \text{ g}$  of Ca  
 a. 1mole b. 0.25 moles  
 c. 0.5 moles d. 0.75 moles
- Q.91** Liquid which has low vapour pressure can be expected to have  
 a. Strong intermolecular forces b. Low boiling point  
 c. High rate of evaporation d. Low density
- Q.92** The value of general gas constant " $R$ " in S.I unit is  
 a.  $1.989 \text{ Cal K}^{-1} \text{ mol}^{-1}$  b.  $62400 \text{ cm}^3 \text{ mol}^{-1}$   
 c.  $0.0821 \text{ J K}^{-1} \text{ mol}^{-1}$  d.  $8.314 \text{ Nm K}^{-1} \text{ mol}^{-1}$
- Q.93** Which set of the following contains elements having three isotopes each?  
 a. S, Ca, C b. N, S, O  
 c. H, Cl, O d. C, H, O
- Q.94** Which of the following cannot be prepared directly from benzene  
 a. Cyclohexane b. Benzene sulphonic acid  
 c. Phenol d. Toluene
- Q.95** Which of the element is always diamagnetic  
 a. Sc b. Zn  
 c. Cu d. Mn
- Q.96** Which of the following alkyne will not react with ammoniacal solution of cuprous chloride  
 a. Ethyne b. 1-Butyne  
 c. Propyne d. 2-Butyne
- Q.97**  $\text{CH}_3\text{—O—CH}_3$  and  $\text{C}_2\text{H}_5\text{OH}$  are  
 a. Chain isomers b. Positional isomers  
 c. Metamers d. Functional group isomers
- Q.98** Foul smelling gas like  $\text{H}_2\text{S}$  cannot be removed from water by the addition of  
 a. HF b. HCl  
 c. HBr d. HI
- Q.99** What is the order of reaction for hydrolysis of ester?  
 a. Zero b. First  
 c. Second d. Pseudo first
- Q.100** Across short period the melting and boiling points increases up to Group  
 a. IIIA b. IVA  
 c. VA d. VIA



- Q.101 Alkenes are also known as  
a. Paraffins  
c. Acetylene
- Q.102 The catalyst which proves to be most effective in case of hydrogenation at room temperature is  
a. Ni  
c. Pt
- Q.103 Which one of the following will be the product at letter 'A'  
$$\text{C}_6\text{H}_6 + \text{CH}_3\text{Cl} \xrightarrow{\text{AlCl}_3} \text{A}$$
  
a. Toluene  
c. Benzoic acid
- Q.104 One of the following does not have alpha hydrogen  
a. Formaldehyde  
c. Acetaldehyde
- Q.105 Which of the following acids does not have a carboxyl group  
a. Acetic acid  
c. Lactic acid
- Q.106 Carboxylic acids are formed by oxidative cleavage of  
a. Ketone  
c. Aldehydes
- Q.107 Which of the following statement is incorrect about carboxylic acid  
a. They dimerise in non-aqueous solvent to show 8-membered ring  
b. Their melting point is higher for even carbon atoms than they next lower and higher carbon atoms  
c. They do not give nucleophilic substitution  
d. Long chain aliphatic monocarboxylic acids are called fatty acids
- Q.108 Ethyl iodide reacts with ammonia to produce  
a. Ethyl amine  
c. Ethanol
- Q.109 A primary alkyl halide can be converted to alkene by  
a. Dehydration  
c. Substitution
- Q.110 The structural formula of pent-3-ene-1-yne  
a.  $\text{H}_2\text{C}=\text{CH}-\text{C}\equiv\text{C}-\text{CH}_3$   
c.  $\text{H}_2\text{C}=\text{CH}-\text{CH}_2-\text{C}\equiv\text{CH}$
- Q.111 Dehydration of ethyl alcohol with concentrated sulphuric acid at  $180^\circ\text{C}$  gives  
a.  $\text{CH}_3\text{CHO}$   
c.  $\text{C}_2\text{H}_4$
- Q.112 The compound  $\text{C}_4\text{H}_{10}\text{O}$ , on oxidation, yields a ketone with formula  $\text{C}_4\text{H}_8\text{O}$ . The parent compound is most likely to be  
a. 1-Butanol  
c. 2-Butanol
- Q.113 Ethanol can be converted in ethanoic acid by  
a. Hydrogenation  
c. Hydration
- Q.114 Which of the following can give ketone  
a. Secondary alcohol  
c. Propyne
- Q.115 Methyl ketones are usually characterized by  
a. Tollen's tests  
c. Lucas test
- Q.116 When 6g carbon and 16g oxygen gas react completely to produce  $\text{CO}_2$ . What is non limiting reactant?  
a. Carbon  
c. Carbondioxide
- b. Olefins  
d. All of these
- b. Hg  
d. Ag
- b. Phenol  
d. Benzyl chloride
- b. Phenyl acetaldehyde  
d. Acetophenone
- b. Benzoic acid  
d. Picric acid
- b. Alkene  
d. Both "a" and "b"
- b. Ethane  
d. Methane
- b. Elimination  
d. Addition
- b.  $\text{H}_2\text{C}=\text{CH}-\text{HC}=\text{CH}-\text{CH}_3$   
d.  $\text{HC}\equiv\text{C}-\text{HC}=\text{CH}-\text{CH}_3$
- b. HCHO  
d.  $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
- b. 1-Pentanol  
d. 2-Methyl -2-propanol
- b. Oxidation  
d. Fermentation
- b. Calcium acetate  
d. All of these
- b. Iodoform test  
d. Fehling solution test
- b. Oxygen  
d. Both are consumed completely

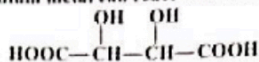




Q.117 Which of the following element belongs to 3<sup>rd</sup> period and group VIA

- a. Al b. P  
c. Si d. S

Q.118 How many moles of sodium metal can react with one mole of following carboxylic acid



- a. One b. Three  
c. Two d. Four

Q.119 The conversion of benzene into chlorobenzene is a

- a. Nucleophilic addition b. Electrophilic addition  
c. Electrophilic substitution d. Nucleophilic substitution

Q.120 Which one of the following is a propagation step in the reaction between  $\text{CH}_4$  and  $\text{Cl}_2$

- a.  $\text{Cl}_2 + \text{CH}_4 \rightarrow \text{CH}_3\text{Cl} + \text{Cl}\cdot$  b.  $\text{Cl}_2 \rightarrow 2\text{Cl}\cdot$   
c.  $\text{CH}_3\cdot + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{Cl}\cdot$  d.  $\text{CH}_3\cdot + \text{HCl} \rightarrow \text{CH}_4 + \text{Cl}\cdot$

Q.121 The general oxidation state of alkaline earth metals and halogens are \_\_\_ and \_\_\_ respectively

- a. +2, +1 b. -1, +2  
c. -2, +1 d. +2, -1

Q.122 Which one is least reactive alkyl halide with respect to nucleophilic substitution reaction

- a.  $\text{CH}_3\text{F}$  b.  $\text{CH}_3\text{Cl}$   
c.  $\text{CH}_3\text{Br}$  d.  $\text{CH}_3\text{I}$

Q.123 Which one of the following is the product of oxidation of butanone

- a. Acetic acid and formic acid b. One mole of butanoic acid  
c. Only acetic acid d. Propanoic acid and formic acid

Q.124 The charged nucleophile is

- a.  $\text{BF}_3$  b.  $\text{OH}^-$   
c.  $\text{NH}_3$  d.  $\text{H}^+$

Q.125  $\text{A} \xrightarrow{\text{Zn}/\text{CH}_3\text{OH}} \text{CH}_3-\text{CH}=\text{CH}_2$

'A' in above reaction is

- a. 1, 1-Dichloropropane b. 1, 3-Dichloropropane  
c. 2, 2-Dichloropropane d. 1, 2-Dichloropropane

Q.126 IUPAC name of divinyl acetylene

- a. 3-Hexyne-1,5-diene b. 1,5-Hexene-3-yne  
c. 1,5-Hexadiene-4-yne d. 1,5-Hexadiene-3-yne

Q.127 By increasing temperature activation energy of a reaction

- a. Increase b. Remain same  
c. Decrease d. May increase or decrease

Q.128 The least reactive metal of 1A is

- a. Li b. K  
c. Na d. Cs

Q.129 The element with minimum binding energy in 3d-series belongs to

- a. Co b. Cu  
c. Ni d. Zn

Q.130 Water adds to acetylene in the presence of mercuric sulphate dissolved in sulphuric acid at 75°C, vinyl alcohol is formed which is further converted into \_\_\_\_\_

- a. Ethanol b. Ethanal  
c. Acetone d. Propanal

Q.131 Which of the following is more basic

- a.  $\text{Sr}(\text{OH})_2$  b.  $\text{Ca}(\text{OH})_2$   
c.  $\text{Be}(\text{OH})_2$  d.  $\text{Al}(\text{OH})_3$

Q.132 Activator for carbonic anhydrase enzyme is

- a.  $\text{Mg}^{+2}$  b.  $\text{Fe}^{+2}$   
c.  $\text{Zn}^{+2}$  d.  $\text{Ca}^{+2}$

- Q.133 Which protein is used in formation of buttons and buckles  
a. Gelatin  
b. Casein  
c. Albumin  
d. Globulin
- Q.134 Rubidium give \_\_\_\_\_ color in flame test  
a. Pink  
b. Blue  
c. Red  
d. Orange
- Q.135 Markonikov's rule is applicable to  
a.  $\text{HC} \equiv \text{CH} + \text{H}_2\text{O}$   
b.  $\text{CH}_2 = \text{CH}(\text{Br}) + \text{HBr}$   
c.  $\text{CH}_3 - \text{CH} + \text{Cl}_2$   
d.  $\text{HC} \equiv \text{CH} + \text{H}_2$
- Q.136 Which element of IIA will be almost inert towards water  
a. Be  
b. Ca  
c. Mg  
d. Sr
- Q.137  $M + 2\text{H}_2\text{O} \xrightarrow{100^\circ\text{C}} M(\text{OH})_2 + \text{H}_2$  "M" may be in given reaction  
a. Be  
b. Ca  
c. Na  
d. Ca
- Q.138 Which of the following property is not associated to isolated atom  
a. Electron affinity  
b. Electronegativity  
c. Ionization energy  
d. Hydration energy
- Q.139 Which element of IA form only normal oxide  
a. Li  
b. K  
c. Na  
d. Rb
- Q.140 The only alkyne which can form aldehyde by addition of water  
a. Ethyne  
b. 1-Butyne  
c. Propyne  
d. 2-Butyne

## PHYSICS

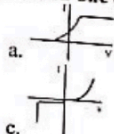
- Q.141 A bomb at rest which explodes into two fragments of masses  $m_1$  &  $m_2$  in the air, the ratio of their velocities will be  
a.  $\frac{m_2}{m_1}$   
b.  $\frac{m_1}{m_2}$   
c.  $\sqrt{\frac{m_1}{m_2}}$   
d.  $\frac{m_1 m_2}{m_1 + m_2}$
- Q.142 A projectile is projected initially with 100 J at an angle  $45^\circ$ . What will be the ratio of K.E to P.E at the highest point?  
a. 1:1  
b. 1:4  
c. 1:3  
d. 3:1
- Q.143 Which one of the following is the angle of projection of a projectile if its range is equal to its height?  
a.  $48^\circ$   
b.  $60^\circ$   
c.  $60^\circ$   
d.  $76^\circ$
- Q.144 If you throw a ball downward, then its acceleration immediately after leaving your hand, assuming no air resistance, is  
a.  $9.8 \text{ m/s}^2$   
b. more than  $9.8 \text{ m/s}^2$   
c. less than  $9.8 \text{ m/s}^2$   
d. Speed of throw is required for answer
- Q.145 A body of mass  $m$  is dropped from a height  $h$  above the ground. The velocity  $v$  of the body when it has lost 25% of its initial potential energy is given by  
a.  $v = \sqrt{gh}$   
b.  $v = \sqrt{\frac{gh}{2}}$   
c.  $v = \sqrt{2gh}$   
d.  $v = 2\sqrt{gh}$
- Q.146 A man is rowing upstream by a force of 1000 N, but he is still at the same position with respect to shore. The water is running at a speed of  $20 \text{ ms}^{-1}$ . The power exerted by him is  
a. Zero  
b. 20000 watt  
c. 10000 watt  
d. 5000 watt



- Q.147 Which one is the bigger unit of work?  
a. 10 Watt h  
b. Calorie  
c. Electron volt  
d. Kilo watt hour
- Q.148 The food we eat in one day has about the same energy as:  
a. 0.33 liter of petrol  
b. 1 litre of petrol  
c. 0.5 liter of petrol  
d. 2 litre of petrol
- Q.149 In motion of satellites, necessary centripetal force is provided by:  
a. Gravitational Force  
b. Coulomb's Force  
c. Magnetic Force  
d. Nuclear Force
- Q.150 Which of the following gives the relationship between linear velocity and angular velocity?  
a.  $v = r\omega$   
b.  $v = r\alpha$   
c.  $v = r\theta$   
d.  $v = s\theta$
- Q.151 The angular speed in radians/hours for daily rotation of our earth is  
a.  $2\pi$   
b.  $\frac{\pi}{24}$   
c.  $4\pi$   
d.  $\frac{\pi}{12}$
- Q.152 If wheel of radius 2 m is moving such that angular velocity of point on the rim changes from 30 rad/sec to 40 rad/sec in 0.5 sec then tangential acceleration of particle  
a. 10 m sec<sup>-2</sup>  
b. 40 m sec<sup>-2</sup>  
c. 20 m sec<sup>-2</sup>  
d. 0 m sec<sup>-2</sup>
- Q.153 A standing wave pattern is formed when the length of string is an integral multiple of \_\_\_\_\_ wavelength  
a. Triple  
b. Half  
c. Full  
d. Double
- Q.154 A 2m long pipe is open at both ends. What is frequency of its 2<sup>nd</sup> overtone? ( $v = 340 \text{ ms}^{-1}$ )  
a. 42.5 Hz  
b. 220 Hz  
c. 85 Hz  
d. 255 Hz
- Q.155 If the tension in the string is doubled and its mass per unit length is reduced to half. Then the speed of transverse wave on it is  
a. Doubled  
b. Halved  
c. Constant  
d. One fourth
- Q.156 Which one of the following factors has no effect on the speed of sound in a gas?  
a. Humidity  
b. Pressure  
c. Temperature  
d. Density
- Q.157 Assume we can change the equilibrium state of a system via two different processes. Assume that the initial and the final state are the same. Which of the quantities  $\Delta U$ ,  $\Delta Q$ ,  $\Delta W$ , and  $\Delta T$  must be the same for the two processes?  
a. only  $\Delta Q$  and  $\Delta W$   
b. only  $\Delta U$  and  $\Delta T$   
c. only  $\Delta Q$  and  $\Delta T$   
d. only  $\Delta U$  and  $\Delta W$
- Q.158 In which of the following process maximum work is done by system during same volume expansion  
a. Isothermal  
b. Isobaric  
c. Adiabatic  
d. Isochoric
- Q.159 The capacity of a parallel plates condenser is 12pF. If the area of both the plate is doubled and the distance between them is reduced to half, the capacity of the condenser will be  
a. 124pF  
b. 48pF  
c. 196pF  
d. 136pF
- Q.160 Capacitor stores energy  
a. On its positive plate  
b. In magnetic field b/w plates  
c. On its negative plate  
d. In Electric field b/w plates
- Q.161 Due to polarization of the dielectric, the capacitance of the capacitor  
a. Increases  
b. Decreases  
c. Zero  
d. Not change
- Q.162 Two positive point charges are placed 2m apart. The electric potential at mid-point due to these two charges will be \_\_\_\_\_  
a. Added to double  
b. Reduced to half  
c. Remains same (no effect)  
d. Cancel each other effect



- Q.163 The specific resistance of a manganin wire is  $50 \times 10^{-8} \Omega \text{m}$ . The resistance of a cube of length 50 cm is  
 a.  $10^{-6} \Omega$   
 b.  $10^{-4} \Omega$   
 c.  $2.5 \times 10^{-5} \Omega$   
 d.  $5 \times 10^{-3} \Omega$
- Q.164 When a wire is stretched and its radius becomes  $r/2$ , then its resistance will be  
 a. 16 R  
 b. 4 R  
 c. 2 R  
 d. 0
- Q.165 When charge particle enters perpendicular to magnetic field, the path followed by it is  
 a. A helix  
 b. A circle  
 c. Straight line  
 d. Ellipse
- Q.166 The magnetic flux will be maximum for an angle of \_\_\_\_\_ b/w plane of coil and field lines  
 a.  $0^\circ$   
 b.  $60^\circ$   
 c.  $90^\circ$   
 d.  $180^\circ$
- Q.167 If plane of A.C generator coil is parallel to field lines, then induced current will be  
 a. Maximum  
 b. Minimum  
 c. Constant throughout  
 d. Zero
- Q.168 Which one of the following is I-V curve of a junction diode?



- Q.169 Terminal voltage " $V_t$ " of the battery is greater than emf of the battery when:  
 a. Battery is charging  
 b. Battery is discharging  
 c. Battery is connected with R  
 d. Battery is connected with voltmeter
- Q.170 A transformer has 1000 turns on its primary coil and 10000 turns in secondary coils. An input voltage of 12 V, 50 Hz is applied to the primary coil then output voltage induced across the secondary coil  
 a. 12 V, 50 Hz  
 b. 120 V, 50 Hz  
 c. 10 V, 50 Hz  
 d. 120 V, 100 Hz
- Q.171 An induced emf is produced when a magnet is plugged into a coil. The magnitude of the induced emf is independent of  
 a. The strength of the magnet  
 b. The resistivity of the wire of the coil  
 c. The speed with which the magnet is moved  
 d. The number of turns in the coil
- Q.172 The transformer in which current in secondary is greater than current in primary is called  
 a. Step down transformer  
 b. Step up transformer  
 c. Ideal transformer  
 d. None of these
- Q.173 During negative half cycle of A.C when P-n Junction is reverse biased, it offers  
 a. High resistance  
 b. No resistance  
 c. Low resistance  
 d. All of these
- Q.174 For rectification we use:  
 a. Transformer  
 b. Choke  
 c. Diode  
 d. Generator
- Q.175 The de-Broglie wave length of an electron travelling with a speed of  $1.0 \times 10^7 \text{m/s}$  equal to, ( $h = 6.6 \times 10^{-34} \text{Js}$  and  $m_e = 9.1 \times 10^{-31} \text{kg}$ ):  
 a.  $7.3 \times 10^{11} \text{m}$   
 b.  $7.3 \times 10^{-11} \text{m}$   
 c.  $7.3 \times 10^3 \text{m}$   
 d.  $7.3 \times 10^{-13} \text{m}$
- Q.176 An electron microscope employs which one of the following principles?  
 a. Electron has wave nature  
 b. Electrons can be focused by an electric field  
 c. Electrons can be focused by a magnetic field  
 d. All of the above
- Q.177 The relation for Paschen series is given as

a.  $\frac{1}{\lambda} = R_H \left( \frac{1}{2^2} - \frac{1}{n^2} \right)$

b.  $\frac{1}{\lambda} = R_H \left( \frac{1}{3^2} - \frac{1}{n^2} \right)$

c.  $\frac{1}{\lambda} = R_H \left( \frac{1}{4^2} - \frac{1}{n^2} \right)$

d.  $\frac{1}{\lambda} = R_H \left( \frac{1}{5^2} - \frac{1}{n^2} \right)$

- Q.178 The rate of decay of a radioactive element.  
 a. Is constant  
 b. Decrease inversely with time  
 c. Increase directly with time  
 d. Decrease exponentially with time
- Q.179 One eighth of the initial mass of certain radioactive isotope remains undecayed after one hour. The half-life of the isotope in minutes is  
 a. 8  
 b. 20  
 c. 30  
 d. 45
- Q.180 Which statement about  $\alpha$ -radiation is correct?  
 a. It is a stream of fast-moving electrons.  
 b. It is more highly ionizing than  $\gamma$ -radiation  
 c. It is a form of electromagnetic radiation  
 d. It is more penetrating than  $\beta$ -radiation

## ENGLISH

### SPOT THE ERROR:

In the first type of sentences, some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected.

- Q.181 He took the test and came out fourteenth on the list, whereupon he refused to enter,  
 a.  
 b.  
 c. being so disappointed for not getting a higher place.  
 d.
- Q.182 Pasteur was so buried in his work on the marriage day that he entirely forgot the  
 a.  
 b.  
 c.  
 d. ceremony and had to be fetched by a friend.
- Q.183 The whole pageant of his life swang before him as he sat by the fire that afternoon.  
 a.  
 b.  
 c.  
 d.
- Q.184 Whenever the cotton bag containing a few rupees collecting from the devotees happened  
 a.  
 b.  
 c. to fall with a thud, he distributed the money among the needy of the village.  
 d.
- Q.185 She'd come to school dressed prettv conservative, but later in the day she'd be  
 a.  
 b.  
 c. sauntering around in a tight mini skirt.  
 d.
- Q.186 Within a week they were head over heels in love; before Chips could walk without a  
 a.  
 b.  
 c.  
 d. stick, they considered engaged.
- Q.187 The sweater which was all in holes, and from these holes one could see the dirty vest  
 a.  
 b.  
 c.  
 d. which was in an even worse state than the sweater.
- Q.188 The evolution of sophisticated chargeback programs have been a boon to facility and  
 a.  
 b.  
 c.  
 d. real estate executives.

### CORRECTION:

In each of the following questions, four alternative sentences are given. Choose the CORRECT one and fill the Circle corresponding to that letter in the MCQ Response Form.

- Q.189  
 a. After she put the lamb chops in the broiler, she sat down to open the package.  
 b. After she had put the lamb chops in the broiler, she sat down to open the package.  
 c. After she had put the lamb chops in broiler, she sat down to open the package.  
 d. After she put the lamb chops in the broiler, she sat down to open package.
- Q.190  
 a. O. Henry was one of the most famous American short story writer.  
 b. O. Henry was one of the most famous American short story writers.  
 c. O. Henry was one of the most famous American short stories writers.  
 d. O. Henry was one of the most famous American short stories writer.



Q.191

- a. I saw a vexing dream one night, not long ago: it was about a fortnight after Christmas.
- b. I had seen a vexing dream one night, not long ago: it was about a fortnight after Christmas.
- c. I had had a vexing dream one night, not long ago: it was about a fortnight after Christmas.
- d. I had a vexing dream one night, not long ago: it was about a fortnight after Christmas.

Q.192

- a. This book of yours, I suppose, contains all the good actions with their details.
- b. This your book, I suppose, contains all the good actions with their details.
- c. Your this book, I suppose, contains all the good actions with their details.
- d. This book of your's, I suppose, contains all the good actions with their details.

Q.193

- a. Still, on the whole, the show was well worth the money. There was nothing to grumble.
- b. Still, as a whole, the show was well worth the money. There was nothing to grumble about.
- c. Still on the whole the show was well worth the money. There was nothing to grumble for.
- d. Still, on the whole, the show was well worth the money. There was nothing to grumble at.

Q.194

- a. An old woman, whose throat was swollen to a frightful size, exclaimed: "O my son, if you could only cure my goitre, I would bless you for evermore!"
- b. An old woman, whose throat was swollen to a frightful size exclaimed: "O my son if you could only cure my goitre, I would bless you for evermore!"
- c. An old woman, whose throat was swollen to a frightful size, exclaimed: "O my son, if you could only cure my goitre I would bless you for evermore!"
- d. An old woman whose throat was swollen to a frightful size, exclaimed "O my son, if you could only cure my goitre, I would bless you for evermore!"

Q.195

Since germs are alive, germs can be killed; they can be destroyed by heat or poisoned by certain chemicals. (The statement is an example of)

- a. Simple sentence
- b. Compound sentence
- c. Complex sentence
- d. Compound complex sentence

Q.196

- a. He had fever, and must have it for a couple of days without knowing it.
- b. He had fever, and must have had it for a couple of days without knowing it.
- c. He had fever, and must had it for a couple of days without knowing it.
- d. He had fever, and must have had it since a couple of days without knowing it.

#### Sentence Completion:

Fill in the blanks with appropriate word.

Q.197 Parents can find something for their children to do \_\_\_\_\_ sitting at home watching television.

- a. Than
- b. Except
- c. Whereas
- d. Besides

Q.198 In February the sales of Christmas decorations are low; however, this figure \_\_\_\_\_ tremendously in November.

- a. Subsides
- b. Wanes
- c. Falls
- d. Rises

#### Synonyms

Choose the word that is most nearly **SIMILAR** in meaning to the word in capital letters.

Q.199 **LIKELIHOOD**

- a. Incredulity
- b. Plausibility
- c. Susceptibility
- d. Ambiguity

#### Antonyms

Choose the word **OPPOSITE** in meaning to **CAPITALIZED** word given above.

Q.200 **REPROACHFUL**

- a. Condemnatory
- b. Bashful
- c. Commendatory
- d. Wrathful



# MCQ'S RESPONSE FORM

A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1				51				101				151			
2				52				102				152			
3				53				103				153			
4				54				104				154			
5				55				105				155			
6				56				106				156			
7				57				107				157			
8				58				108				158			
9				59				109				159			
10				60				110				160			
11				61				111				161			
12				62				112				162			
13				63				113				163			
14				64				114				164			
15				65				115				165			
16				66				116				166			
17				67				117				167			
18				68				118				168			
19				69				119				169			
20				70				120				170			
21				71				121				171			
22				72				122				172			
23				73				123				173			
24				74				124				174			
25				75				125				175			
26				76				126				176			
27				77				127				177			
28				78				128				178			
29				79				129				179			
30				80				130				180			
31				81				131				181			
32				82				132				182			
33				83				133				183			
34				84				134				184			
35				85				135				185			
36				86				136				186			
37				87				137				187			
38				88				138				188			
39				89				139				189			
40				90				140				190			
41				91				141				191			
42				92				142				192			
43				93				143				193			
44				94				144				194			
45				95				145				195			
46				96				146				196			
47				97				147				197			
48				98				148				198			
49				99				149				199			
50				100				150				200			

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CORRECT EXAMPLE   
INCORRECT EXAMPLES 

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